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See It, Feel It, Want It. Neural Correlates of Perspective Taking in Advertising: an EEG Pilot Study

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Abstract

A deep understanding of the cognitive and emotional mechanisms underlying the perception of advertising stimuli is critical to optimizing the effectiveness of brands' marketing campaigns. Recently, the use of neuroscientific tools such as electroencephalography (EEG), has shown great potential in measuring those processes otherwise inaccessible through traditional methodologies. Although well-established EEG metrics already exist in the literature to measure attention, motivation, cognitive load, and engagement in response to advertising stimuli, the analysis of processes such as mentalization and perspective-taking remains under-explored. This pilot study aims to identify the neural correlates associated with perspective-taking in response to interactions presented in advertisement scenes and to assess whether they can be predictive of commercial effectiveness. Nineteen participants were exposed to a series of commercials while their brain activity was recorded by EEG, then answered questions designed to measure their degree of perspective-taking and their subjective evaluation of the commercial (liking, perceived effectiveness, willingness to pay, and intention to purchase). Results suggest that neural activity in the theta band may be involved in perspective-taking processes related to the characters' actions in the commercials and highlight the need for more research to extensively explore this topic. This pilot study represents a first step toward integrating new neuroscientific measures to evaluate the effectiveness of advertising campaigns, providing insights for academia and marketing, and helping to create advertisements that can elicit consumers' emotional and cognitive responses, finally enhancing brand impact.

Keywords: Consumer Behavior, EEG, Consumer Neuroscience, Neuromarketing, Perspective-Taking, Advertising

Introduction

The need for a deeper understanding of consumer perception of advertising has encouraged the use of neuroscientific techniques - such as electroencephalography (EEG) - to study the otherwise inaccessible consumers emotional and cognitive processes, advancing our consumer behavior knowledge (Venkatraman et al., 2015). However, scientific literature lacks consensus on how to measure different aspects of advertising effectiveness: while indices of memorization, attention, approach, and cognitive load seem to be more established, recent frameworks suggest the importance of other cognitive processes, such as perspective-taking (Chan et al., 2023). Taking the perspective of an advertisement characters may indeed facilitate emotional and cognitive identification with the message, increasing engagement with the advertisement and ultimately raising campaign effectiveness. At the neural level, perspective-taking processes are associated with theory of mind (ToM), the ability to attribute mental states to self and others (Rochas et al., 2023), involving the temporoparietal junction and medial prefrontal cortex (Shurtz et al., 2014; Bukowski, 2018). The mirror neuron system (MNS), known to be activated during observation, understanding, and imitation of others' actions (Perry et al., 2010), also plays a key role in perspective-taking. MNS activation can be measured by EEG through Mu rhythm desynchronization, which is detected in cortical areas involved in perception and movement (motor, premotor, and somatosensory cortex) (Fox et al., 2016). Studying the neural networks involved in perspective-taking processes and understanding how their activity can be effectively assessed, could provide new insights into understanding and evaluating the effectiveness of advertising campaigns.

Research objectives

Based on these premises, this pilot study aims to address the following research objectives

1. Identify the neural correlates associated with perspective-taking towards characters seen in commercials and their interaction with advertised products and services.

2. Explore the impact of perspective-taking on advertising perception, hypothesizing that greater involvement in this cognitive process may be associated with greater campaign effectiveness. We hypothesize that, for example, observing a happy and satisfied character using the advertised product generates an empathic response in the consumer, fostering greater identification with the actor as well as positive emotions, increasing the liking of the commercial, and the willingness to purchase the product.

Materials and methods

Nineteen participants aged 27-55 years (M= 41.31; SD= 8.8), voluntarily took part in the study. They were all presented with 4 commercials (namely "p", "e", "l", "y") - with

"p" and "e" advertising beverages, and "l" and "y" advertising foods - in a randomized order. All stimuli had a duration of 30 s and were produced within the past 5 years. At the end of each commercial, participants answered questions on a 6-point Likert scale, assessing commercial liking, its perceived effectiveness, willingness to pay, and purchase intention. In addition, a set of specially created questions was administered to assess the level of perspective-taking (cognitive, emotional, and sensory) experienced by participants while watching those specific scenes. In a final questionnaire, participants' familiarity with brands presented in the stimuli and their perspective-taking ability (Perspective Taking Scale of the Interpersonal Reactivity Index; Davis, 1980 - Italian version; Albiero, 2006) were assessed to investigate their impact on the measured perspective-taking. All the stimuli and the questions were administered via iMotions v. 10.0 software (iMotions, A/V), through a monitor placed in front of the participant. The electroencephalographic data (EEG), recorded with a 36-channel NVX EEG (Medical Computer Systems, Ltd., Moscow, Russia), focused on analyzing the scenes in which the characters interacted with the advertised products (drank the advertised drink or ate the advertised food). EEG data were recorded, preprocessed, and analyzed via Matlab (The Mathworks, Inc.) following the procedure described in Fici et al. (2024). The specific scenes in which characters interacted with the product were isolated via iMotions, and the neural correlates associated with viewing those specific scenes were measured for each EEG band (delta δ, theta θ, alpha α, beta β, gamma γ). Correlations (Pearson's r) between the EEG and the relative self-report data were then calculated via Matlab.

Results and Discussions

Among the 4 stimuli presented, only the interaction scenes of 2 stimuli ("p" and "l") showed statistically significant correlations between EEG data and the self-report measures. The interaction scene of stimulus "l" registered a positive correlation between perspective taking, measured through self-report, and theta band activity in the left parietal region (P3) $(r(13)= .819, p= .021)$, while the interaction scene of stimulus "p" registered a negative correlation between perspective taking and theta band activity in the right prefrontal region (FP2) $(r(14)= -.775, p= .047)$. These findings align with previous research suggesting theta activity involvement in social cognition tasks (Blume et al., 2015). For stimulus "p", theta activity in the right prefrontal region also negatively correlated with advertisement effectiveness measures, specifically its ability to effectively promote the brand $(r(15)= -.793, p= .016)$, suggesting a relationship between these two processes. Reduced theta activity in the frontal region may indicate lower cognitive effort and increased mental fluidity (Wascher et al., 2014), which can both enhance perspective-taking and be related to perceived advertisement effectiveness.

Conclusions and Implications

This pilot study provides new insights into the neural correlates of perspective-taking in advertising and suggests how these may positively influence advertising perception and effectiveness. From a theoretical perspective, the results expand our understanding of the neural mechanisms underlying perspective-taking and contribute to a better understanding of the cognitive and emotional processes associated with advertisement perception. Additionally, the integration of neuroscientific metrics can enrich existing consumer behavior models by highlighting the role of processes such as perspective-taking, a fundamental process that has received little attention. From a more applied perspective, this line of research can provide practical insights for marketers: the use of advertising strategies and narrative choices that foster emotional and cognitive identification with commercial characters could increase campaign effectiveness by improving consumer engagement. This integrated approach can contribute to the success of marketing initiatives by enabling companies to develop more targeted and engaging campaigns based on neuroscience insights. As a result, brands can increase their impact in the marketplace by improving cognitive and emotional connections with audiences and strengthening their competitive position.

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